CLAIMS

1. A fuel cell comprising:

an electrode membrane structural body provided with:

an electrolyte membrane; and

a pair of gas diffusion layers formed on both surfaces of the electrolyte membrane and serving as electrodes, respectively; and

a pair of separators between which the electrode membrane structural body is sandwiched, each of the pair of the separators having gas flow channels that allow gas to be supplied to associated one of the pair of gas diffusion layers, and a porosity of the associated one of the pair of gas diffusion layers at an area outside the gas flow channels is lower than a porosity of the associated one of the pair of gas diffusion layers at an area facing the gas flow channels.

2. The fuel cell according to claim 1, wherein each of the pair of separators has a convex portion formed at the area outside the gas flow channels.

3. The fuel cell according to claim 2, wherein the convex portion is held in pressured contact with the associated one of the pair of gas diffusion layers.

4. The fuel cell according to claim 2, wherein a corner of the convex portion is formed in a round portion.

5. The fuel cell according to claim 2, wherein the convex portion has a sloped surface angled with respect to the associated one of the pair of gas diffusion layers.

6. The fuel cell according to claim 5, wherein a height of the convex portion increases as the convex portion is close to the gas flow channels.

7. The fuel cell according to claim 2, wherein the convex portion surrounds the gas flow channels.

8. The fuel cell according to claim 2, further comprising a gasket intervening between each of the pair of separators and the associated one of the pair of gas diffusion layers,

wherein the convex portion is positioned between the gas flow channels and the gasket.

9. The fuel cell according to claim 1, further comprising a pressing member intervening between the electrode membrane structural body and each of the pair of separators to press the associated one of the pair of gas diffusion layers.

10. The fuel cell according to claim 9, wherein the pressing member presses the associated one

of the pair of gas diffusion layers at the area outside the gas flow channels.

11. The fuel cell according to claim 9, wherein the pressing member includes an electrically insulating member.

12. The fuel cell according to claim 9, further comprising a restricting member that restricts the pressing member.

13. The fuel cell according to claim 12, further comprising a gasket intervening between each of the pair of separators and the associated one of the pair of gas diffusion layers,

wherein the restricting member is located at an area outside the pressing member with the gasket being located therebetween.

14. The fuel cell according to claim 1, wherein the associated one of the pair of gas diffusion layers at the area outside the gas flow channels is preliminarily compressed.

15. The fuel cell according to claim 1, wherein the porosity of the associated one of the pair of gas diffusion layers is distributed in surface symmetry with respect to the electrolyte membrane.

16. A fuel cell comprising:

an electrode membrane structural body provided with:

an electrolyte membrane; and

a pair of gas diffusion layers formed on both surfaces of the electrolyte membrane and serving as electrodes, respectively;

a pair of separators between which the electrode membrane structural body is sandwiched, each of the pair of the separators having gas flow channels that allow gas to be supplied to associated one of the pair of gas diffusion layers; and

lowering means for lowering a porosity of the associated one of the pair of gas diffusion layers at an area outside the gas flow channels than a porosity of the associated one of the pair of gas diffusion layers at an area facing the gas flow channels.

17. A method of manufacturing a fuel cell, comprising:

preparing an electrode membrane structural body provided with:

an electrolyte membrane; and

a pair of gas diffusion layers formed on both surfaces of the electrolyte membrane and serving as electrodes, respectively; and

sandwiching the electrode membrane structural body between a pair of separators each of

which has gas flow channels that allow gas to be supplied to associated one of the pair of gas diffusion layers, a porosity of the associated one of the pair of gas diffusion layers at an area outside the gas flow channels being lower than a porosity of the associated one of the pair of gas diffusion layers at an area facing the gas flow channels.

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